20100301AEC

September 29, 2010

FILED/ACCEPTED

OCT - 4 2010

Federal Communications Commission
Office of the Secretary

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
The Portals
445 Twelfth Street, N.W.
Washington, D.C. 20554

Re: Station KBPO(AM), Port Neches, Texas – Facility Id. 68762
Application for License Authorization – BL-20100301AEC
Vision Latina Broadcasting, Inc. – FRN: 0010-0191-15

Dear Ms. Dortch:

Vision Latina Broadcasting, Inc., licensee of Station KBPO(AM), Port Neches, Texas, hereby amends its application for license authorization to supply the attached Proof of Performance, dated September 20, 2010, in connection with the application on file (BL-20100301AEC). This amendment is being filed pursuant to the Audio Division's letter of August 5, 2010.

Respectfully submitted,

Vision Latina Broadcasting, Inc.

By: _____
Gilardo Castro
Its President

ORIGINAL

FCC FORM 302-AM, SECTION III

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

RADIO STATION KBPO
(Facility ID # 68762)

VISION LATINA BROADCASTING, INC.

1150 kHz, 0.063/.5 kW, DA-1

PORT NECHES, TEXAS

SEPTEMBER, 2010

WILLOUGHBY & VOSS
BROADCAST TECHNICAL CONSULTANTS
P.O. BOX 701190
SAN ANTONIO, TEXAS 78270-1190
(210) 525-1111

VISION LATINA BROADCASTING, INC.
KBPO RADIO
1150 kHz, 0.063/0.5 kW, DA-1
PORT NECHES, TEXAS
SEPTEMBER, 2010

APPLICATION FOR STATION LICENSE
(Method of Moments Proof)

FCC Form 302, Section III

Technical Summary Statement

Exhibits:

1. Verification of Method of Moments Model
2. DA-Day Operating Parameter Determination
3. DA-Night Operating Parameter Determination
4. Details of Model for Towers Individually Driven
5. Details of Model for DA-DAY
6. Details of Model for DA-NIGHT
7. Sample System Measurements
8. Reference Field Strength Measurements
9. Direct Measurement of Power
10. Antenna Monitor and Sample System
11. Radio Frequency Radiation Considerations
12. Statement Regarding As Built Array Geometry

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

Vision Latina Broadcasting, Inc.

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

X Station License W Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KBPO		1150	Unlimited	0.063	0.5

2. Station location

State	City or Town
Texas	Port Neches

3. Transmitter location

State	County	City or Town	Street address (or other identification)
TX	Orange	Vidor	at the end of Tracie Lane

4. Main studio location

State	County	City or Town	Street address (or other identification)
TX	Jefferson	Port Arthur	3101 32nd Street

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)
TX	Jefferson	Port Arthur	3101 32nd Street

6. Has type-approved stereo generating equipment been installed? W Yes X No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? X Yes W No

W Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed.

Exhibit No. Exh. 7

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
1.12 1.17	3.29

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50.0	50.0	j 0.0	j 0.0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1 (NE)	0.0	0.0	100.0	100.0		
2 (SW)	-3.3	-3.3	79.7	79.7		

Manufacturer and type of antenna monitor: Potomac Instruments AM-19, Ser #1127

SECTION III - Page 2

9. Description of antenna system (If directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.) ASR# 1273260 and 1273261

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
2 uniform cross-section, base insulated, guyed, steel towers.	66.98	67.6	68.6	Exhibit No. DNA

Excitation [X] Series [ ] Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	West Longitude
30 ° 05 ' 04 "	93 ° 58 ' 13 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. DNA

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No. DNA

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

Does Not Apply

11. Give reasons for the change in antenna or common point resistance.

Does Not Apply

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Lyndon H. Willoughby	Lyndon H. Willoughby
Address (include ZIP Code)	Date
Willoughby & Voss, LLC. P.O. Box 701190 San Antonio, Texas 78270-1190	September 20, 2010
	Telephone No. (Include Area Code)
	210-862-5285

[ ] Technical Director

[ ] Chief Operator

[ ] Other (specify)

[ ] Registered Professional Engineer

[X] Technical Consultant

email: willvoss@satx.rr.com

KBPO - Technical Summary Statement

These technical exhibits support an application for station license for radio station KBPO, Port Neches, Texas. KBPO operates on 1150 kHz, and KBPO is currently licensed by the FCC.

Information is provided herein demonstrating that the directional antenna parameters for both the daytime and nighttime patterns (DA-1), have been determined in accordance with the requirements of Section 73.151(c) of the FCC Rules. The system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the Rules.

Lyndon H. Willoughby

Lyndon H. Willoughby
Willoughby & Voss, LLC.
September 20, 2010

KBPO - Verification of Method of Moments Model - Exhibit 1

The base impedance of each tower was measured with a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system.

The measurement point and the open circuit point ("Reference Point"), was at the normal mounting location of the toroidal transformer (removed for calibration measurements). The RF current travels on copper tubing through the ATU bowl insulator and is connected to the tower. The only shunt component between the "Reference Point" and the tower base is the high impedance (approximately 5.75 kohm) tower lighting choke. Due to the high impedance of the lighting chokes, they exhibited little effect on the circuit impedance and were included in the process of calibrating the method of moments model ("model") to converge with the measured self impedances.

The following pages show the calculation of circuits which were performed to relate the model impedances of the tower feedpoints to the Reference Point measured impedances. Westberg Circuit Analysis Program ("WCAP"), was used to calculate values for the assumed circuit.

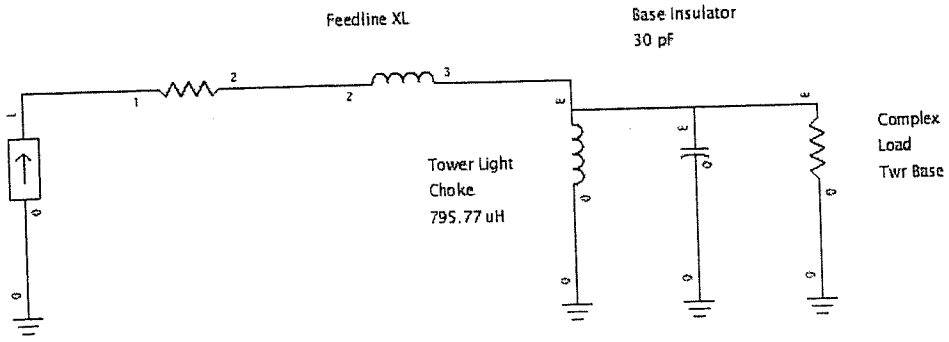
In each of the WCAP tabulations, node 2 represents the ATU Reference Point and node 3 represents the feedpoint of the tower. Ground potential is represented by node 0. The calculated Reference Point impedance is shown below "TO IMPEDANCE" on line R 1>2 following the phantom 1.0 ohm resistors that were included in series with the drive current sources (I 0 1), to provide calculation points for the impedances. The tower feedpoint impedances from the method of moments model are represented by complex loads from node 3 to ground (R 3>0). The assumed stray capacitance of 0.00003 uF and the inductance of lighting choke (795.8 uH) for both towers appear at C 3>0 and L 3>0 on the WCAP printout. Their combined equivalent circuit appears as the lumped load on the model, (-j 2,559.67 ohms).

The modeled and measured self-impedance at the ATU Reference Point, with all other towers open circuited at their Reference Point, agree within the +/-2 ohms and +/- 4% (resistance and reactance), as required by the FCC Rules.

VERIFICATION OF METHOD OF MOMENTS MODEL

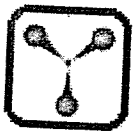
KBPO, 1150 kHz, 0.5/0.063 kW, DA-1
Port Neches, Texas

Center Frequency: 1.15 MHz
Frequency Range: ... kHz
Frequency Step: 0.01 kHz



(Feedlines, Chokes & Strays combined as Xoc)

TWR	L(uH)	XL	Xoc	Z modeled	Z ATU (model)	Z ATU (msrd)
1	2.860	+j 20.67	-j 2559.7	70.24 +j 123.88	70.86 +j 122.939	70.85 +j 122.91
2	3.010	+j 21.75	-j 2559.7	92.13 +j 149.34	93.32 -j 82.913	93.68 +j 171.68



WCAP - KBPO T1 OC self

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	142.3995 ∠	59.6938° V
Node:	2	141.8975 ∠	60.0424° V
Node:	3	124.4218 ∠	55.2849° V

WCAP PART			CURRENT IN		CURRENT OUT	
WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	70.24000000	124.42 ∠	55.285° V	1.00 ∠	-0.173° A
C	3→0	0.00003000	124.42 ∠	55.285° V	0.03 ∠	145.285° A
L	3→0	795.77000000	124.42 ∠	55.285° V	0.02 ∠	-34.715° A
L	2→3	2.86000000	20.67 ∠	90.000° V	1.00 ∠	0.000° A
R	1→2	1.00000000	1.00 ∠	0.000° V	1.00 ∠	0.000° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	70.24000000	70.24 + j	102.040	0.00 + j	0.000
C	3→0	0.00003000	0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	0.00 + j	5749.966	0.00 + j	0.000
L	2→3	2.86000000	70.86 + j	122.939	70.86 + j	102.274
R	1→2	1.00000000	71.86 + j	122.939	70.86 + j	122.939

WCAP PART	VSWR

WCAP INPUT DATA:

	1.1500	0.00001000		1
R	70.24000000	3	0	102.04000000
C	0.00003000	3	0	
L	795.77000000	3	0	0.00000000
L	2.86000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	0.00000000

WCAP - KBPO T2 OC self

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	195.8843 ∠	61.2156° V
Node:	2	195.4047 ∠	61.4726° V
Node:	3	176.6018 ∠	58.1007° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	92.13200000	176.60 ∠	58.101° V	1.01 ∠	-0.228° A
C	3→0	0.00003000	176.60 ∠	58.101° V	0.04 ∠	148.101° A
L	3→0	795.77000000	176.60 ∠	58.101° V	0.03 ∠	-31.899° A
L	2→3	3.01000000	21.75 ∠	90.000° V	1.00 ∠	0.000° A
R	1→2	1.00000000	1.00 ∠	0.000° V	1.00 ∠	0.000° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	92.13200000	92.13 + j	149.340	0.00 + j	0.000
C	3→0	0.00003000	0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	0.00 + j	5749.966	0.00 + j	0.000
L	2→3	3.01000000	93.32 + j	171.680	93.32 + j	149.931
R	1→2	1.00000000	94.32 + j	171.680	93.32 + j	171.680

WCAP PART VSWR

WCAP INPUT DATA:

	1.1500	0.00001000		1
R	92.13200000	3	0	149.34000000
C	0.00003000	3	0	
L	795.77000000	3	0	0.00000000
L	3.01000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.00000000	0	1	0.00000000

KBPO - DA-DAY Operating Parameter Determination - Exhibit 2

After converging the model with the measured open-circuit self impedance for each tower in the array, the model was used to make the directional antenna calculations.

The model calculated the voltage values for the source point of each tower in the array, as well as the tower currents. The summation of current moments, when normalized, equate to the theoretical field parameters which produce the directional pattern.

The ATU output currents were calculated using WCAP nodal analysis. WCAP input data consists of:

- Tower currents calculated using the method of moments model for the directional antenna.
- Tower operating impedances calculated by the method of moments for the directional antenna. In WCAP these are treated as a complex load from node 3 to ground.
- The circuit values which were derived from analysis of the measured open-circuit self impedances.

The WCAP nomenclature, in the following tabulations are defined as:

- Node 2 is the ATU Reference Point (where the TCT sampler is located).
- Node 3 is the tower feedpoint.
- Node 0 is ground potential.
- Node 1>2 is a phantom 1.0 ohm resistor.
- Node 2>3 is the assumed series reactance.
- Node 3>0 is both the assumed shunt capacitance of base insulator & strays, as well as a resistor that represents the complex load presented by the tower.
- "TO IMPEDANCE" is the impedance from one node to the following node.

Since the TCT samplers and the sampling lines are near identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

KBPO - DA-DAY Operating Parameter Determination - Exhibit 2
KBPO, 1150 kHz, 0.063/0.50 kW, DA-1
Port Neches, Texas

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
1 (NE)	1	2.24	5.2	1.000	0.0
2 (SW)	13	1.78	1.9	0.797	-3.3

WCAP - KBPO T1 DA-Day

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	253.0678 ∠	65.7273° V
Node:	2	251.9747 ∠	66.1701° V
Node:	3	212.7401 ∠	60.1171° V

	WCAP PART		CURRENT IN		CURRENT OUT	
	WCAP PART		BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	54.29700000	212.74 ∠	60.117° V	2.24 ∠	5.066° A
C	3→0	0.00003000	212.74 ∠	60.117° V	0.05 ∠	150.117° A
L	3→0	795.77000000	212.74 ∠	60.117° V	0.04 ∠	-29.883° A
L	2→3	2.86000000	46.23 ∠	95.200° V	2.24 ∠	5.200° A
R	1→2	1.00000000	2.24 ∠	5.200° V	2.24 ∠	5.200° A

	WCAP PART		FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	54.29700000	54.30 + j	77.691	0.00 + j	0.000
C	3→0	0.00003000	-0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	-0.00 + j	5749.966	0.00 + j	0.000
L	2→3	2.86000000	54.66 + j	98.488	54.66 + j	77.823
R	1→2	1.00000000	55.66 + j	98.488	54.66 + j	98.488

WCAP PART VSWR

WCAP INPUT DATA:

	1.1500	0.00001000		1
R	54.29700000	3	0	77.69100000
C	0.00003000	3	0	
L	795.77000000	3	0	0.00000000
L	2.86000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	2.23700000	0	1	5.20000000

WCAP - KBPO T2 DA Day

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	267.0478 ∠	62.5103° V
Node:	2	266.1778 ∠	62.8445° V
Node:	3	233.0596 ∠	58.2121° V

WCAP PART			CURRENT IN		CURRENT OUT	
WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	71.87000000	233.06 ∠	58.212° V	1.79 ∠	1.723° A
C	3→0	0.00003000	233.06 ∠	58.212° V	0.05 ∠	148.212° A
L	3→0	795.77000000	233.06 ∠	58.212° V	0.04 ∠	-31.788° A
L	2→3	3.01000000	38.76 ∠	91.900° V	1.78 ∠	1.900° A
R	1→2	1.00000000	1.78 ∠	1.900° V	1.78 ∠	1.900° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	71.87000000	71.87 + j	108.540	0.00 + j	0.000
C	3→0	0.00003000	0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	0.00 + j	5749.966	0.00 + j	0.000
L	2→3	3.01000000	72.54 + j	130.572	72.54 + j	108.823
R	1→2	1.00000000	73.54 + j	130.572	72.54 + j	130.572

WCAP PART	VSWR

WCAP INPUT DATA:

	1.1500	0.00001000		1
R	71.87000000	3	0	108.54000000
C	0.00003000	3	0	
L	795.77000000	3	0	
L	3.01000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	1.78200000	0	1	0.00000000
				1.90000000

KBPO - DA-NIGHT Operating Parameter Determination - Exhibit 3

After converging the model with the measured open-circuit self impedance for each tower in the array, the model was used to make the directional antenna calculations.

The model calculated the voltage values for the source point of each tower in the array, as well as the tower currents. The summation of current moments, when normalized, equate to the theoretical field parameters which produce the directional pattern.

The ATU output currents were calculated using WCAP nodal analysis. WCAP input data consists of:

- Tower currents calculated using the method of moments model for the directional antenna.
- Tower operating impedances calculated by the method of moments for the directional antenna. In WCAP these are treated as a complex load from node 3 to ground.
- The circuit values which were derived from analysis of the measured open-circuit self impedances.

The WCAP nomenclature, in the following tabulations are defined as:

- Node 2 is the ATU Reference Point (where the TCT sampler is located.
- Node 3 is the tower feedpoint.
- Node 0 is ground potential.
- Node 1>2 is a phantom 1.0 ohm resistor.
- Node 2>3 is the assumed series reactance.
- Node 3>0 is both the assumed shunt capacitance of base insulator & strays, as well as a resistor that represents the complex load presented by the tower.
- "TO IMPEDANCE" is the impedance from one node to the following node.

Since the TCT samplers and the sampling lines are identical, the antenna monitor ratios and phases corresponding to the theoretical parameters were calculated directly from the modeled ATU currents.

KBPO - DA-NIGHT Operating Parameter Determination - Exhibit 3
KBPO, 1150 kHz, 0.063/0.50 kW, DA-1
Port Neches, Texas

TOWER	Modeled Current Node	Current Magnitude @ TCT in amps	Current Phase @ TCT in degrees	Antenna Monitor Ratio	Antenna Monitor Phase in deg
1 (NE)	1	0.794	5.2	1.000	0.0
2 (SW)	13	0.633	1.9	0.797	-3.3

WCAP - KBPO T1 DA Night

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	89.8238 ∠	65.7273° V
Node:	2	89.4358 ∠	66.1701° V
Node:	3	75.5099 ∠	60.1171° V

WCAP PART			CURRENT IN		CURRENT OUT	
WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	54.29700000	75.51 ∠	60.117° V	0.80 ∠	5.066° A
C	3→0	0.00003000	75.51 ∠	60.117° V	0.02 ∠	150.117° A
L	3→0	795.77000000	75.51 ∠	60.117° V	0.01 ∠	-29.883° A
L	2→3	2.86000000	16.41 ∠	95.200° V	0.79 ∠	5.200° A
R	1→2	1.00000000	0.79 ∠	5.200° V	0.79 ∠	5.200° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	54.29700000	54.30 + j	77.691	0.00 + j	0.000
C	3→0	0.00003000	0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	0.00 + j	5749.966	0.00 + j	0.000
L	2→3	2.86000000	54.66 + j	98.488	54.66 + j	77.823
R	1→2	1.00000000	55.66 + j	98.488	54.66 + j	98.488

WCAP PART	VSWR

WCAP INPUT DATA:

	1.1500	0.00001000		1
R	54.29700000	3	0	77.69100000
C	0.00003000	3	0	
L	795.77000000	3	0	0.00000000
L	2.86000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	0.79400000	0	1	5.20000000

WCAP - KBPO T2 DA Night

WCAP OUTPUT AT FREQUENCY: 1.150 MHz

NODE VOLTAGES

Node:	1	94.8604 ∠	62.5103° V
Node:	2	94.5514 ∠	62.8445° V
Node:	3	82.7872 ∠	58.2121° V

WCAP PART			CURRENT IN		CURRENT OUT	
WCAP PART			BRANCH VOLTAGE		BRANCH CURRENT	
R	3→0	71.87000000	82.79 ∠	58.212° V	0.64 ∠	1.723° A
C	3→0	0.00003000	82.79 ∠	58.212° V	0.02 ∠	148.212° A
L	3→0	795.77000000	82.79 ∠	58.212° V	0.01 ∠	-31.788° A
L	2→3	3.01000000	13.77 ∠	91.900° V	0.63 ∠	1.900° A
R	1→2	1.00000000	0.63 ∠	1.900° V	0.63 ∠	1.900° A

WCAP PART			FROM IMPEDANCE		TO IMPEDANCE	
R	3→0	71.87000000	71.87 + j	108.540	0.00 + j	0.000
C	3→0	0.00003000	0.00 - j	4613.187	0.00 + j	0.000
L	3→0	795.77000000	0.00 + j	5749.966	0.00 + j	0.000
L	2→3	3.01000000	72.54 + j	130.572	72.54 + j	108.823
R	1→2	1.00000000	73.54 + j	130.572	72.54 + j	130.572

WCAP PART VSWR

WCAP INPUT DATA:

	1.1500		0.00001000	1
R	71.87000000	3	0	108.54000000
C	0.00003000	3	0	
L	795.77000000	3	0	0.00000000
L	3.01000000	2	3	0.00000000
R	1.00000000	1	2	0.00000000
I	0.63300000	0	1	1.90000000

KBPO - Details of Model for Towers Individually Driven - Exhibit 4

Using Expert MININEC Broadcast Professional, Version 14.5, the KBPO two tower array was modeled. Each tower was represented by one wire. The top and bottom wire end points were specified using electrical degrees for the frequency of 1150 kHz. Each tower wire was modeled based on 12 wire segments. The towers are physically 92.5 electrical degrees in height, the segment length is 7.71 electrical degrees.

The characteristics (height) were adjusted until the modeled resistance approximately matched the measured resistance. Final adjustment to converge the model was made based on the introduction of a circuit model which consists of branches representing feedline inductances and stray capacitances. The base impedances were measured at the normal location of the current sampling TCTs (Reference Point) with the other tower opened circuited at its respective Reference Point. The method of moments model assumed loads at ground level having the reactances that were calculated for each case using the base circuit models for the open circuited towers of the array.

The modeled heights relative to the physical heights of the individual towers are within the specified range of 75% to 125%. The modeled radius is within the specified range of 80% to 150% of the cylindrical radius that represents the circumference equal to the sum of the tower face width. KBPO uses towers of identical, uniform cross-section, triangular shape having sides of 17.75 inches.

TOWER	Physical Height (deg)	Modeled Height (deg)	Modeled % of Height	Modeled Radius (m)	%Equivalent Radius
1	92.5	103.37	111.69	0.1594	100
2	92.5	110.35	119.30	0.1594	100

The following pages show the method of moments model details of the individually driven towers.

KBPO T1 Self (all others OC)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.1594	12
		0	0	103.37		
2	none	170.	265.	0	.1594	12
		170.	265.	110.35		

Number of wires = 2
current nodes = 24

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	1	8.61417	2	9.19583
radius	1	.1594	1	.1594

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.15	0	1	.0239282	.025544

Sources

source	node	sector	magnitude	phase	type
1	1	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	13	0	-2,559.67	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.15	70.24	102.04	123.88	55.5	4.8762	-3.6138	-2.4805

KBPO T2 Self (all others OC)

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.1594	12
		0	0	103.37		
2	none	170.	265.	0	.1594	12
		170.	265.	110.35		

Number of wires = 2
current nodes = 24

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	1	8.61417	2	9.19583
radius	1	.1594	1	.1594

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.15	0	1	.0239282	.025544

Sources

source	node	sector	magnitude	phase	type
1	13	1	1.	0	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-2,559.67	0	0	0

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 13, sector 1							
1.15	92.132	149.34	175.47	58.3	7.0857	-2.4681	-3.6299

KBPO - Details of Model for DA-DAY - Exhibit 5

Using Expert MININEC Broadcast Professional, Version 14.5, with the individual tower's characteristics that were verified by the individual tower impedance measurements. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern.

Towers 1 and 2 of the array, are both used by the daytime pattern. There are no other towers at the KBPO site.

Tower	Wire	Base Node
1	1	1
2	2	13

It should be noted that voltages and currents shown on the tabulations that are not specified as "rms" values are the corresponding peak values.

KBPO Full Daytime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.15 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.9	-5.

VOLTAGES AND CURRENTS - rms

source voltage node	magnitude	phase (deg)	current magnitude	phase (deg)
1	212.05	60.3	2.23718	5.2
13	231.989	58.4	1.78208	1.9

Sum of square of source currents = 16.3616
Total power = 500. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00492803	-.00706608
Y(1, 2)	.00106727	-.00141095
Y(2, 1)	.00106718	-.00141101
Y(2, 2)	.00322318	-.00514832

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	69.7722	101.777
Z(1, 2)	-17.6326	-31.3181
Z(2, 1)	-17.6308	-31.3193
Z(2, 2)	91.675	149.082

KBPO Full Daytime Model

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.1594	12
		0	0	103.37		
2	none	170.	265.	0	.1594	12
		170.	265.	110.35		

Number of wires = 2
current nodes = 24

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	1	8.61417	2	9.19583
radius	1	.1594	1	.1594

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.15	0	1	.0239282	.025544

Sources

source	node	sector	magnitude	phase	type
1	1	1	299.883	60.3	voltage
2	13	1	328.083	58.4	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.15	54.297	77.691	94.784	55.1	3.9788	-4.4617	-1.9243
source = 2; node 13, sector 1							
1.15	71.87	108.54	130.18	56.5	5.22	-3.3695	-2.6785

CURRENT rms
Frequency = 1.15 MHz
Input power = 500. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0				
2	0	0	8.61417	2.23718	5.2	2.22794	.203185
3	0	0	17.2283	2.34198	3.1	2.33849	.127639
4	0	0	25.8425	2.36692	1.8	2.36573	.0751563
5	0	0	34.4567	2.33435	.8	2.33412	.0324214
6	0	0	43.0708	2.2484	359.9	2.24839	-2.12E-03
7	0	0	51.685	2.11208	359.2	2.11189	-.0288532
8	0	0	60.2992	1.92861	358.6	1.92802	-.0478631
9	0	0	68.9133	1.70166	358.	1.70063	-.0591794
10	0	0	77.5275	1.43523	357.5	1.43386	-.0628667
11	0	0	86.1417	1.13344	357.	1.1319	-.0590394
12	0	0	94.7558	.799549	356.6	.798118	-.0478098
				.433308	356.2	.432331	-.0290728

END	0	0	103.37	0	0	0	0
GND	-14.8165	169.353	0	1.78208	1.9	1.78113	.0580704
14	-14.8165	169.353	9.19583	1.91149	359.	1.91122	-.0320813
15	-14.8165	169.353	18.3917	1.96175	357.3	1.95961	-.0916488
16	-14.8165	169.353	27.5875	1.95757	356.	1.95282	-.136346
17	-14.8165	169.353	36.7833	1.90295	354.9	1.89551	-.168056
18	-14.8165	169.353	45.9792	1.80064	354.	1.79086	-.187355
19	-14.8165	169.353	55.175	1.65358	353.2	1.64209	-.194544
20	-14.8165	169.353	64.3708	1.46522	352.6	1.45286	-.189944
21	-14.8165	169.353	73.5667	1.23951	351.9	1.22723	-.173986
22	-14.8165	169.353	82.7625	.980576	351.4	.969465	-.1472
23	-14.8165	169.353	91.9583	.692031	350.8	.683217	-.110097
24	-14.8165	169.353	101.154	.374581	350.4	.369288	-.062747
END	-14.8165	169.353	110.35	0	0	0	0

KBPO - Details of Model for DA-NIGHT - Exhibit 6

Using Expert MININEC Broadcast Professional, Version 14.5, with the individual tower's characteristics that were verified by the individual tower impedance measurements. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern.

Towers 1 and 2 of the array, are both used by the nighttime pattern. There are no other towers at the KBPO site.

Tower	Wire	Base Node
1	1	1
2	2	13

It should be noted that voltages and currents shown on the tabulations that are not specified as "rms" values are the corresponding peak values.

KBPO Full Nighttime Model

MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = 1.15 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.9	-5.

VOLTAGES AND CURRENTS - rms

source voltage node	magnitude	phase (deg)	current magnitude	phase (deg)
1	75.2701	60.3	.794121	5.2
13	82.3481	58.4	.632574	1.9

Sum of square of source currents = 2.06156

Total power = 63. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.00492803	-.00706608
Y(1, 2)	.00106727	-.00141095
Y(2, 1)	.00106718	-.00141101
Y(2, 2)	.00322318	-.00514832

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	69.7722	101.777
Z(1, 2)	-17.6326	-31.3181
Z(2, 1)	-17.6308	-31.3193
Z(2, 2)	91.675	149.082

KBPO Full Nighttime Model

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.1594	12
		0	0	103.37		
2	none	170.	265.	0	.1594	12
		170.	265.	110.35		

Number of wires = 2
current nodes = 24

Individual wires	minimum wire	minimum value	maximum wire	maximum value
segment length	1	8.61417	2	9.19583
radius	1	.1594	1	.1594

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	1.15	0	1	.0239282	.025544

Sources

source	node	sector	magnitude	phase	type
1	1	1	106.448	60.3	voltage
2	13	1	116.458	58.4	voltage

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1.15	54.297	77.691	94.784	55.1	3.9787	-4.4617	-1.9243
source = 2; node 13, sector 1							
1.15	71.87	108.54	130.18	56.5	5.22	-3.3695	-2.6785

CURRENT rms
Frequency = 1.15 MHz
Input power = 63. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	.794124	5.2	.790842	.0721235
2	0	0	8.61417	.831322	3.1	.830087	.0453075
3	0	0	17.2283	.840169	1.8	.839746	.0266778
4	0	0	25.8425	.828611	.8	.828531	.0115085
5	0	0	34.4567	.798105	359.9	.798104	-7.52E-04
6	0	0	43.0708	.749716	359.2	.749646	-.0102418
7	0	0	51.685	.684591	358.6	.68438	-.0169897
8	0	0	60.2992	.604027	358.	.603661	-.0210066
9	0	0	68.9133	.509458	357.5	.508969	-.0223154
10	0	0	77.5275	.402332	357.	.401786	-.0209569
11	0	0	86.1417	.283811	356.6	.283303	-.0169708
12	0	0	94.7558	.153809	356.2	.153463	-.0103199

ATU

0.792 /5.33°

ATU

0.629 2.08°

END	0	0	103.37	0	0	0	0
GND	-14.8165	169.353	0	.632574	1.9	.632238	.0206129
14	-14.8165	169.353	9.19583	.678511	359.	.678416	-.0113877
15	-14.8165	169.353	18.3917	.696355	357.3	.695594	-.0325321
16	-14.8165	169.353	27.5875	.694868	356.	.69318	-.048398
17	-14.8165	169.353	36.7833	.675479	354.9	.67284	-.0596539
18	-14.8165	169.353	45.9792	.639163	354.	.635694	-.0665044
19	-14.8165	169.353	55.175	.586961	353.2	.582885	-.0690561
20	-14.8165	169.353	64.3708	.520101	352.6	.515712	-.0674234
21	-14.8165	169.353	73.5667	.43998	351.9	.435624	-.061759
22	-14.8165	169.353	82.7625	.348071	351.4	.344127	-.0522509
23	-14.8165	169.353	91.9583	.245647	350.8	.242518	-.0390807
24	-14.8165	169.353	101.154	.132963	350.4	.131084	-.022273
END	-14.8165	169.353	110.35	0	0	0	0

KBPO - Sample System Measurements - Exhibit 7

Using a Hewlett-Packard 8753C network analyzer and a Tunwall Radio directional coupler, in a calibrated measurement system, impedance measurements were made of the antenna monitor sampling system. The towers were placed in an open circuited condition by removing the ATU output j-plug. The measurement equipment was connected to the antenna monitor end of the sample lines and measurements were made for two conditions. The first condition was with the sample line terminated in its associated Delta Electronics TCT sampler and the second condition where the sample line was open circuited by disconnecting the line from its TCT.

The following table shows the frequencies of the first and second resonances. As the length of a distortionless transmission line is 180 electrical degrees at the difference frequency between adjacent resonant frequencies, and frequencies of resonance occur at odd multiples of 90 degrees electrical length. The sample line length at the resonant frequency closest to the carrier frequency, was found to be 90 electrical degrees. The electrical lengths at carrier frequency appearing in the following table were calculated by dividing the carrier frequency by the resonant frequency closest to the carrier and multiplying by 90 degrees.

Tower	Sample Line Open-Circuited First Frequency of Resonance (MHZ)	Sample Line Open-Circuited Second Frequency of Resonance (MHZ)	Sample Line Calculated Electrical Length at 1150 kHz (Degrees)	1150 kHz Measured Z with TCT-1 Connected (Ohms)
1	.67611	2.0400	153.08	51.2 -j 0.79
2	.67584	2.0388	153.14	51.3 +j 0.88

The sample line lengths meet the specification that they be equal in length within one electrical degree.

KBPO, 1150 kHz.

Daytime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
85	1	3.40	4.35	30-05-15.8	93-56-07.1	On FM-1135 at fold-down warning sign
	2	6.31	2.19	30-05-21.1	93-54-18.4	On FM-1442 at white reflector pole
	3	8.00	1.05	30-05-26.5	93-53-15.3	On Sheppard Lane at drive of #2389
177	1	3.26	75.4	30-03-19.7	93-58-06.3	Down logging road, at twin oaks even with beehives
	2	9.90	10.7	29-59-43.5	93-57-54.4	Grigsby Av. & Montrose St. at street sign
	3	11.78	8.45	29-58-43.0	93-57-50.1	Texas Av. & Nall St. at street sign
265	1	11.93	2.37	30-04-31.7	94-05-37.6	Park St. at American Legion sign
	2	13.84	2.84	30-04-26.8	94-06-49.0	On Goliad St. even with large metal bldg to the west
	3	15.28	2.15	30-04-21.4	94-07-42.4	end of S. 10th street at first drive to office bldg, on right
353	1	4.59	43.0	30-07-31.8	93-58-35.8	1570 S.Timberlane at black mailbox
	2	7.17	14.6	30-08-55.3	93-58-44.2	TX Hwy 12 & Evangeline Dr. (FM1132) in line with Valero door
	3	9.57	7.9	30-10-12.4	93-58-52.0	1560 Evangeline Ln “Fox” at gate

The Characteristic impedance was calculated using the following formula, where R1 +jX1 and R2 +jX2 are the measured impedances at the +45 and -45 degree offset frequencies respectively:

$$Zo = ((R1^2 + X1^2)^{1/2} \bullet (R2^2 + X2^2)^{1/2})^{1/2}$$

Tower	+45 Degree Offset Frequency (MHz)	+45 Degree Measured Impedance (Ohms)	-45 Degree Offset Frequency (MHz)	-45 Degree Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1	1.00670	2.79 +j48.46	0.33560	0.49 -j51.06	49.79
2	1.01376	2.97 +j49.97	0.33792	0.55 -j50.54	50.30

The sample line measured characteristic impedances meet the requirement that they be equal within 2 ohms.

The TCTs were calibrated by measuring their outputs with a common reference signal using a Hewlett-Packard 8753C network analyzer in a calibrated measurement system. The TCTs were placed side by side, bolted to a two inch wide piece of copper strap with a conductor passing the reference signal through them. The outputs of the TCTs were fed into the Channel A and Channel B receiver inputs of the 8753C, which was set up to measure the relative ratios and phases of the output voltages. The following results were measured for the carrier frequency, 1150 kHz:

Tower	Ratio	Phase (deg)	TCT Model #	TCT Serial #
1	Reference	Reference	TCT-3	17951
2	1.0007	+0.4680	TCT-3	17952

TCT-3 are 1.0 Volt/amp toroidal current transformers manufactured by Delta Electronics. These TCTs are rated for absolute magnitude accuracy of +/- 2% and absolute phase accuracy of +/- 3 degrees. The maximum measured transformer-to-transformer variation between the two was 0.07% and 0.47 degree, and as such provide far more accurate relative indications than could be the case within the manufacturer's rated accuracy.

KBPO - Reference Field Strength Measurements - Exhibit 8

Reference field strength measurements were made using a Potomac Instruments FIM-4100 meter, the meter being factory calibrated July 27, 2009. Measurements were made at three point locations along each monitored radial and along a radial thru the major lobe of each directional pattern. The following pages contain the measured field strength values, the GPS coordinates and point descriptions.

KBPO, 1150 kHz.

Nighttime Reference Field Strength Measurements

Radial Deg. T	Point Num.	Distance (km)	Field (mV/m)	Coordinates (NAD 83) Lat. N	Long. W	Description
85	1	3.40	0.51	30-05-15.8	93-56-07.1	On FM-1135 at fold-down warning sign
	2	6.31	0.26	30-05-21.1	93-54-18.4	On FM-1442 at white reflector pole
	3	8.00	0.10	30-05-26.5	93-53-15.3	On Sheppard Lane at drive of #2389
177	1	3.26	8.50	30-03-19.7	93-58-06.3	Down logging road, at twin oaks even with beehives
	2	9.90	1.22	29-59-43.5	93-57-54.4	Grigsby Av. & Montrose St. at street sign
	3	11.78	0.95	29-58-43.0	93-57-50.1	Texas Av. & Nall St. at street sign
265	1	11.93	0.30	30-04-31.7	94-05-37.6	Park St. at American Legion sign
	2	13.84	0.33	30-04-26.8	94-06-49.0	On Goliad St. even with large metal bldg to the west
	3	15.28	0.23	30-04-21.4	94-07-42.4	end of S. 10th street at first drive to office bldg, on right
353	1	4.59	5.00	30-07-31.8	93-58-35.8	1570 S.Timberlane at black mailbox
	2	7.17	1.70	30-08-55.3	93-58-44.2	TX Hwy 12 & Evangeline Dr. (FM1132) in line with Valero door
	3	9.57	0.89	30-10-12.4	93-58-52.0	1560 Evangeline Ln “Fox” at gate

KBPO - Direct Measurement of Power - Exhibit 9

Measurement of the Common Point Impedance for each pattern was made with a Hewlett-Packard 8753-C Vector Network Analyzer and a Tunwall Radio Directional Coupler. The analyzer was connected at the node directly adjacent to the common point current meter. The resistance value was adjusted with the common point matching network to provide the correct impedance at the authorized common point current value for each directional antenna pattern. The measured Common Point Impedance is R = 50.0 Ohms, X= j 0.0 Ohms for both Day and Night operation. The common point currents of 3.29 Amperes for Daytime and 1.12 Amperes for Nighttime were established.

Potomac Instruments, inc.
7309 Grove Rd Unit D Frederick, MD 21704 Phone 301-696-5550 Fax 301-696-5553

Certificate of Calibration

For

Medium Wave Directional Antenna Monitor

Model: AM-19

Serial Number: 1127

Performed for: Radio Station KBPO

Address: 419 Stadium Rd
Port Arthur, TX 77642

Calibration Frequency: 1000 KHz

Termination Impedance: 50 ohms

Temperature: 71 degrees F

Relative Humidity: 45%

Equipment Modifications from Standard: None

This document certifies that the above instrument has been tested and calibrated in accordance with factory calibration procedures and found to comply with the published specifications for the equipment.

Approved By: _____
Production Manager

Calibration Date: August 13, 2010

Next Recommended Calibration: September 2013

KBPO - Radio Frequency Radiation Considerations - Exhibit 11

Operation of KBPO will not result in exposure of the workers or the general public to levels of non-ionizing energy in excess of the limits specified in 47 CFR 1.1310.
Access to the transmitter site is restricted by locked fences. Each tower base is enclosed within a locked perimeter fence spaced in accordance with Recommended Guidelines. Warning signs are posted on the entry gate and on all four sides of each tower base fence. The signs state that a potential exists for possible exposure to hazardous R.F. energy. In the case where personnel must enter the tower enclosure fences, operation is at reduced power, in accordance with the KBPO RFR Plan.

KBPO - Statement of As Built Array Geometry - Exhibit 12

KBPO is an existing licensed facility. KBPO (operating under various call signs) was constructed at the present location in 1977. The station has operated from this site with these tower locations since original construction. The instant application relies on the same theoretical field parameters and array geometry. The last Full Proof of Performance was filed in 1977.

KBPO is exempted from the requirement to submit a surveyor's certification, per FCC Public Notice DA 09-2340, dated October 29, 2009.